



Tables

TABLE 5.3-1
SUMMARY OF GROUND WATER ELEVATIONS AND APPARENT LIGHT NON-AQUEOUS PHASE LIQUID THICKNESS
IAOC A10 - GASOLINE COMPONENT TANKFIELD

EXXONMOBIL ENVIRONMENTAL AND PROPERTY SOLUTIONS COMPANY / BAYWAY REFINERY COMPLEX
LINDEN, NEW JERSEY

Well ID	Date	Top of Casing Elevation (FMSL)	Depth to Water (feet)	Depth to LNAPL (feet)	LNAPL Thickness (feet)	Corrected GW Elevation (FMSL)
APZ-116	3/11/2022	11.85	6.24	ND	0.00	5.61
	4/22/2022	11.85	6.41	ND	0.00	5.44
APZ-117	3/11/2022	9.03	3.54	ND	0.00	5.49
	4/22/2022	9.03	3.92	ND	0.00	5.11
APZ-118	3/11/2022	8.96	3.41	ND	0.00	5.55
	4/22/2022	8.96	3.80	ND	0.00	5.16
APZ-119	3/11/2022	8.95	3.30	ND	0.00	5.65
	4/22/2022	8.95	3.79	ND	0.00	5.16
APZ-120	3/11/2022	12.11	8.14	8.12	0.02	3.99
	4/22/2022	12.11	NA*	8.26	NA*	3.85*
GMW-1	3/11/2022	13.29	6.36	ND	0.00	6.93
	4/22/2022	13.29	6.22	ND	0.00	7.07
GMW-120	3/11/2022	11.87	7.79	ND	0.00	4.08
	4/22/2022	11.87	7.50	ND	0.00	4.37
GMW-207	3/11/2022	11.91	5.30	ND	0.00	6.61
	4/22/2022	11.91	5.41	ND	0.00	6.50
GMW-222	3/11/2022	11.84	5.98	5.09	0.89	6.66
	4/22/2022	11.84	6.34	4.95	1.39	6.75
GMW-223	3/11/2022	12.23	5.81	ND	0.00	6.42
	4/22/2022	12.23	5.58	ND	0.00	6.65
GMW-270	3/11/2022	12.46	4.59	ND	0.00	7.87
	4/22/2022	12.46	4.63	ND	0.00	7.83
GMW-657	3/11/2022	7.93	2.43	ND	0.00	5.50
	4/22/2022	7.93	2.76	ND	0.00	5.17
P3	3/11/2022	9.35	3.62	ND	0.00	5.73
	4/22/2022	9.35	3.42	ND	0.00	5.93
P4	3/11/2022	9.43	3.64	ND	0.00	5.79
	4/22/2022	9.43	3.56	ND	0.00	5.87
P-13	3/11/2022	10.49	3.38	ND	0.00	7.11
	4/22/2022	10.49	3.43	ND	0.00	7.06
P-14	3/11/2022	18.96	13.70	13.48	0.22	5.46
	4/22/2022	18.96	14.25	14.05	0.20	4.89
P-16	3/11/2022	16.72	9.92	ND	0.00	6.80
	4/22/2022	16.72	9.80	ND	0.00	6.92
P-17	3/11/2022	16.11	8.98	ND	0.00	7.13
	4/22/2022	16.11	8.75	ND	0.00	7.36
P-18	3/11/2022	16.72	9.07	ND	0.00	7.65
	4/22/2022	16.72	8.92	ND	0.00	7.80
P-19	3/11/2022	16.54	11.29	ND	0.00	5.25
	4/22/2022	16.54	11.05	ND	0.00	5.49
RW-13	3/11/2022	8.87	8.21	ND	0.00	0.66
	4/22/2022	8.87	>8.30	NA	NA	<0.57
RW-14	3/11/2022	10.03	6.91	ND	0.00	3.12
	4/22/2022	10.03	2.63	ND	0.00	7.40
RW-15	3/11/2022	18.71	16.68	ND	0.00	2.03
	4/22/2022	18.71	>16.80	NA	NA	<1.91
RW-16	3/11/2022	18.52	>16.92	NA	NA	<1.60
	4/22/2022	18.52	>17.24	NA	NA	<1.28
RW-17	3/11/2022	18.47	>18.14	NA	NA	<0.33
	4/22/2022	18.47	>18.20	NA	NA	<0.27
RW-18	3/11/2022	15.28	>16.82	NA	NA	<-1.54
	4/22/2022	15.28	16.73	ND	0.00	-1.45
RW-19	3/11/2022	15.01	>16.18	NA	NA	<-1.17
	4/22/2022	15.01	>16.10	NA	NA	<-1.09

TABLE 5.3-1
SUMMARY OF GROUND WATER ELEVATIONS AND APPARENT LIGHT NON-AQUEOUS PHASE LIQUID THICKNESS
IAOC A10 - GASOLINE COMPONENT TANKFIELD

EXXONMOBIL ENVIRONMENTAL AND PROPERTY SOLUTIONS COMPANY / BAYWAY REFINERY COMPLEX
LINDEN, NEW JERSEY

Well ID	Date	Top of Casing Elevation (FMSL)	Depth to Water (feet)	Depth to LNAPL (feet)	LNAPL Thickness (feet)	Corrected GW Elevation (FMSL)
RW-20	3/11/2022	15.68	16.04	ND	0.00	-0.36
	4/22/2022	15.68	>16.20	NA	NA	<-0.52
RW-21	3/11/2022	16.52	15.43	ND	0.00	1.09
	4/22/2022	16.52	15.47	ND	0.00	1.05
RW-22	3/11/2022	16.86	13.90	ND	0.00	2.96
	4/22/2022	16.86	>16.06	NA	NA	<0.80
RW-23	3/11/2022	16.55	16.29	ND	0.00	0.26
	4/22/2022	16.55	>16.68	NA	NA	<-0.13
RW-24	3/11/2022	16.59	15.73	ND	0.00	0.86
	4/22/2022	16.59	14.04	ND	0.00	2.55
RW-25	3/11/2022	16.87	15.34	ND	0.00	1.53
	4/22/2022	16.87	9.05	ND	0.00	7.82
RW-26	3/11/2022	15.75	11.41	ND	0.00	4.34
	4/22/2022	15.75	8.99	ND	0.00	6.76
RW-27	3/11/2022	15.87	13.28	ND	0.00	2.59
	4/22/2022	15.87	13.34	ND	0.00	2.53
RW-28	3/11/2022	14.86	12.29	ND	0.00	2.57
	4/22/2022	14.86	12.09	ND	0.00	2.77
RW-29	3/11/2022	16.34	12.80	ND	0.00	3.54
	4/22/2022	16.34	>12.19	NA	NA	<4.15
RW-A9-1	3/11/2022	7.18	2.36	ND	0.00	4.82
	4/22/2022	7.18	3.01	ND	0.00	4.17
RW-A9-2	3/11/2022	6.86	6.69	6.69	FILM	0.17
	4/22/2022	6.86	6.68	ND	0.00	0.18
RW-A9-3	3/11/2022	6.61	6.28	6.28	FILM	0.33
	4/22/2022	6.61	NA*	6.54	NA*	0.07*
S-13	3/11/2022	8.62	2.72	ND	0.00	5.90
	4/22/2022	8.62	3.56	ND	0.00	5.06
S-14	3/11/2022	10.10	1.59	ND	0.00	8.51
	4/22/2022	10.10	1.86	ND	0.00	8.24
S-15	3/11/2022	19.13	12.53	ND	0.00	6.60
	4/22/2022	19.13	12.15	ND	0.00	6.98
S-16	3/11/2022	18.92	12.45	ND	0.00	6.47
	4/22/2022	18.92	12.27	ND	0.00	6.65
S-17	3/11/2022	18.89	7.13	ND	0.00	11.76
	4/22/2022	18.89	6.82	ND	0.00	12.07
S-18	3/11/2022	15.79	9.90	ND	0.00	5.89
	4/22/2022	15.79	9.58	ND	0.00	6.21
S-19	3/11/2022	15.42	9.93	ND	0.00	5.49
	4/22/2022	15.42	9.36	ND	0.00	6.06
S-20	3/11/2022	15.94	10.17	ND	0.00	5.77
	4/22/2022	15.94	9.97	ND	0.00	5.97
S-21	3/11/2022	16.50	10.83	ND	0.00	5.67
	4/22/2022	16.50	10.54	ND	0.00	5.96
S-22	3/11/2022	16.69	10.69	ND	0.00	6.00
	4/22/2022	16.69	10.60	ND	0.00	6.09
S-23	3/11/2022	17.14	10.92	ND	0.00	6.22
	4/22/2022	17.14	10.74	ND	0.00	6.40
S-24	3/11/2022	16.88	10.31	ND	0.00	6.57
	4/22/2022	16.88	10.26	ND	0.00	6.62
S-25	3/11/2022	16.74	10.43	ND	0.00	6.31
	4/22/2022	16.74	9.55	ND	0.00	7.19
S-26	3/11/2022	15.99	8.92	ND	0.00	7.07
	4/22/2022	15.99	8.73	ND	0.00	7.26

TABLE 5.3-1
SUMMARY OF GROUND WATER ELEVATIONS AND APPARENT LIGHT NON-AQUEOUS PHASE LIQUID THICKNESS
IAOC A10 - GASOLINE COMPONENT TANKFIELD

EXXONMOBIL ENVIRONMENTAL AND PROPERTY SOLUTIONS COMPANY / BAYWAY REFINERY COMPLEX
LINDEN, NEW JERSEY

Well ID	Date	Top of Casing Elevation (FMSL)	Depth to Water (feet)	Depth to LNAPL (feet)	LNAPL Thickness (feet)	Corrected GW Elevation (FMSL)
S-27	3/11/2022	16.32	10.34	ND	0.00	5.98
	4/22/2022	16.32	10.23	ND	0.00	6.09
S-28	3/11/2022	16.43	10.49	ND	0.00	5.94
	4/22/2022	16.43	10.18	ND	0.00	6.25
S-29	3/11/2022	16.70	10.90	ND	0.00	5.80
	4/22/2022	16.70	10.78	ND	0.00	5.92
SUMP-L	3/11/2022	9.98	5.32	ND	0.00	4.66
	4/22/2022	9.98	5.08	ND	0.00	4.90
STW-D2	3/11/2022	12.91	6.76	ND	0.00	6.15
	4/22/2022	12.91	7.14	ND	0.00	5.77

Notes:

FMSL Feet above mean sea level
LNAPL Light non-aqueous phase liquid
GW Ground water
ND Not detected
FILM Apparent LNAPL Thickness less than 0.01 feet
NA Not available
* Unable to determine depth to water and LNAPL thickness due to LNAPL viscosity. Corrected ground water elevation is approximate, with the actual elevation lower than or equal to the elevation shown.
> Depth to ground water was greater than the depth depicted, which was measured as the top of pump
< Ground water elevation is lower than the elevation depicted, which was calculated using the depth to top of pump measured during the event; actual depth to LNAPL and/or ground water was unable to be measured due to the limited clearance between well casing/screen and the recovery pump.

If LNAPL is detected, Ground Water Elevation is corrected using the following formula:

Corrected Ground Water Elevation = (Top of Casing Elevation - Depth to Water) + (Specific Gravity x Apparent LNAPL Thickness)

Specific Gravity = 0.899 for wells in Gasoline Component Tankfield (IAOC A10) and Domestic Trade (IAOC A13), 0.88 for wells in Conservation Area (IAOC A9)

TABLE 5.3-2
VOLATILE ORGANIC COMPOUNDS IN GROUND WATER
IAOC A10 - GASOLINE COMPONENT TANKFIELD

EXXONMOBIL ENVIRONMENTAL AND PROPERTY SOLUTIONS COMPANY / BAYWAY REFINERY COMPLEX
LINDEN, NEW JERSEY

Location ID		BW SW CRITERIA FRESH	NJDEP CLASS II- A GWRS	GMW-207	P-13	P-14	P-16	P-17	P-18	P-19	S-13	S-21
Date				03/14/2022	03/14/2022	03/14/2022	02/28/2022	02/28/2022	02/28/2022	02/28/2022	03/14/2022	03/04/2022
Chemical	Units											
1,1,1-trichloroethane	µg/L	76	30	<0.30	NA	NS	<0.30	<0.30	<0.30	<0.30	NA	NA
1,1,2,2-tetrachloroethane	µg/L	380	1	<0.30	NA	NS	<0.30	<0.30	<0.30	<0.30	NA	NA
1,1,2-trichloro-1,2,2-trifluoroethane	µg/L	~	20000	<0.30	NA	NS	<0.30	<0.30	<0.30	<0.30	NA	NA
1,1,2-trichloroethane	µg/L	500	3	<0.30	NA	NS	<0.30	<0.30	<0.30	<0.30	NA	NA
1,1-dichloroethane	µg/L	410	50	<0.30	NA	NS	<0.30	<0.30	<0.30	<0.30	NA	NA
1,1-dichloroethylene	µg/L	65	1	<0.30	NA	NS	<0.30	<0.30	<0.30	<0.30	NA	NA
1,2,3-trichlorobenzene	µg/L	8	~	<0.40	NA	NS	<0.40	<0.40	<0.40	<0.40	NA	NA
1,2,4-trichlorobenzene	µg/L	30	9	<0.30	NA	NS	<0.30	<0.30	<0.30	<0.30	NA	NA
1,2-dibromo-3-chloropropane	µg/L	~	0.02	<0.30	NA	NS	<0.30	<0.30	<0.30	<0.30	NA	NA
1,2-dibromoethane	µg/L	~	0.03	<0.20	NA	NS	<0.20	<0.20	<0.20	<0.20	NA	NA
1,2-dichlorobenzene	µg/L	14	600	<0.20	NA	NS	<0.20	<0.20	<0.20	<0.20	NA	NA
1,2-dichloroethane	µg/L	910	2	<0.30	NA	NS	<0.30	<0.30	<0.30	<0.30	NA	NA
1,2-dichloropropane	µg/L	360	1	<0.30	NA	NS	<0.30	<0.30	<0.30	<0.30	NA	NA
1,3-dichlorobenzene	µg/L	38	600	<0.30	NA	NS	<0.30	<0.30	<0.30	<0.30	NA	NA
1,4-dichlorobenzene	µg/L	9.4	75	<0.30	NA	NS	<0.30	<0.30	<0.30	<0.30	NA	NA
2-butanone	µg/L	22000	300	<0.50	<0.50	NS	<0.50	<0.50	<0.50	<0.50	<0.50	NA
2-hexanone	µg/L	99	40	<0.40	NA	NS	<0.40	<0.40	<0.40	<0.40	NA	NA
4-methyl-2-pentanone	µg/L	170	~	<0.50	<0.50	NS	<0.50	<0.50	<0.50	<0.50	<0.50	NA
acetone	µg/L	1700	6000	<0.70	<0.70	NS	<0.70	0.70 J	1.8 J	3.0 J	<0.70	NA
Benzene	µg/L	114	1	<0.30	<0.30	NS	<0.30	0.46 J	<0.30	<0.30	<0.30	NA
bromochloromethane	µg/L	~	~	<0.20	NA	NS	<0.20	<0.20	<0.20	<0.20	NA	NA
bromodichloromethane	µg/L	340	1	<0.20	NA	NS	<0.20	<0.20	<0.20	<0.20	NA	NA
bromoform	µg/L	230	4	<1.0	NA	NS	<1.0	<1.0	<1.0	<1.0	NA	NA
bromomethane	µg/L	16	10	<0.30	NA	NS	<0.30	<0.30	<0.30	<0.30	NA	NA
carbon disulfide	µg/L	15	700	<0.30	NA	NS	<0.30	<0.30	<0.30	<0.30	NA	NA
carbon tetrachloride	µg/L	240	1	<0.30	NA	NS	<0.30	<0.30	<0.30	<0.30	NA	NA
chlorobenzene	µg/L	47	50	<0.30	NA	NS	<0.30	<0.30	<0.30	<0.30	NA	NA
chloroethane	µg/L	~	5	<0.20	NA	NS	<0.20	<0.20	<0.20	<0.20	NA	NA
chloroform	µg/L	140	70	<0.30	NA	NS	<0.30	<0.30	<0.30	<0.30	NA	NA
chloromethane	µg/L	~	30	<0.20	NA	NS	<0.20	<0.20	<0.20	<0.20	NA	NA
cis-1,2-dichloroethylene	µg/L	620	70	<0.30	NA	NS	<0.30	<0.30	<0.30	<0.30	NA	NA
cis-1,3-dichloropropene	µg/L	~	1	<0.20	NA	NS	<0.20	<0.20	<0.20	<0.20	NA	NA
cyclohexane	µg/L	158	~	<1.0	NA	NS	<1.0	<1.0	<1.0	8.8	NA	NA
dibromochloromethane	µg/L	320	1	<0.20	NA	NS	<0.20	<0.20	<0.20	<0.20	NA	NA
dichlorodifluoromethane	µg/L	~	1000	<0.20	NA	NS	<0.20	<0.20	<0.20	<0.20	NA	NA

TABLE 5.3-2
VOLATILE ORGANIC COMPOUNDS IN GROUND WATER
IAOC A10 - GASOLINE COMPONENT TANKFIELD

EXXONMOBIL ENVIRONMENTAL AND PROPERTY SOLUTIONS COMPANY / BAYWAY REFINERY COMPLEX
LINDEN, NEW JERSEY

Location ID		BW SW CRITERIA FRESH	NJDEP CLASS II- A GWRS	GMW-207	P-13	P-14	P-16	P-17	P-18	P-19	S-13	S-21
Date				03/14/2022	03/14/2022	03/14/2022	02/28/2022	02/28/2022	02/28/2022	02/28/2022	03/14/2022	03/04/2022
Chemical	Units											
ethylbenzene	µg/L	14	700	<0.40	<0.40	NS	<0.40	<0.40	<0.40	<0.40	<0.40	NA
isopropylbenzene	µg/L	4.8	700	<0.20	NA	NS	<0.20	0.53 J	2.8 J	4.3 J	NA	NA
m,p-Xylene	µg/L	~	~	<2.0	NA	NS	<2.0	<2.0	<2.0	<2.0	NA	NA
methyl acetate	µg/L	~	7000	<0.30	NA	NS	<0.30	<0.30	<0.30	<0.30	NA	NA
methyl cyclohexane	µg/L	52	~	<0.50	NA	NS	<0.50	<0.50	<0.50	150	NA	NA
methyl tert-butyl ether	µg/L	51000	70	<0.20	NA	NS	<0.20	<0.20	<0.20	1.7	NA	NA
methylene chloride	µg/L	940	3	<0.30	NA	NS	<0.30	<0.30	<0.30	<0.30	NA	NA
o-xylene	µg/L	~	~	<0.40	NA	NS	<0.40	<0.40	<0.40	0.94 J	NA	NA
styrene	µg/L	32	100	<0.30	NA	NS	<0.30	<0.30	<0.30	<0.30	NA	NA
tetrachloroethylene	µg/L	45	1	<0.30	NA	NS	<0.30	<0.30	<0.30	<0.30	NA	NA
toluene	µg/L	253	600	<0.20	<0.20	NS	<0.20	0.36 J	<0.20	<0.20	<0.20	NA
trans-1,2-dichloroethylene	µg/L	970	100	<0.30	NA	NS	<0.30	<0.30	<0.30	<0.30	NA	<0.50
trans-1,3-dichloropropene	µg/L	~	1	<0.20	NA	NS	<0.20	<0.20	<0.20	<0.20	NA	<0.50
trichloroethylene	µg/L	47	1	<0.30	NA	NS	<0.30	<0.30	<0.30	<0.30	NA	<0.70
trichlorofluoromethane	µg/L	~	2000	<0.20	NA	NS	<0.20	<0.20	<0.20	<0.20	NA	0.73 J
vinyl chloride	µg/L	930	1	<0.20	NA	NS	<0.20	<0.20	<0.20	<0.20	NA	<0.40
xylene, total	µg/L	27	1000	<0.40	<0.40	NS	<0.40	<0.40	<0.40	0.94 J	<0.40	0.51 J
Total VOC TICs	µg/L	~	500	0	NA	NS	99.8	393	317.5	397	NA	<0.40

Notes:

BW SW CRITERIA FRESH	Bayway Surface Water Criteria Standards - Fresh
NJDEP GWRS	New Jersey Department of Environmental Protection Class II-A Ground Water Remediation Standards
Green Well ID	Analytical results are compared to the NJDEP GWRS and Fresh SW Criteria
Gray Well ID	Analytical results are compared to the NJDEP GWRS only
µg/L	Micrograms per liter
~	A NJDEP Class II-A GWRS does not exist for this analyte
<5.0	Not detected at or above the method detection limit, method detection limit included.
NA	Not analyzed
NS	Not sampled
*-	Laboratory Control Sample (LCS) and/or Laboratory Control Sample Duplicate (LSCD) is outside of acceptance limits, low biased
J	Indicates an estimated value
TICs	Tentatively identified compounds

TABLE 5.3-3
SEMI-VOLATILE ORGANIC COMPOUNDS IN GROUND WATER
IAOC A10 - GASOLINE COMPONENT TANKFIELD

EXXONMOBIL ENVIRONMENTAL AND PROPERTY SOLUTIONS COMPANY / BAYWAY REFINERY COMPLEX
LINDEN, NEW JERSEY

Location ID		BW SW CRITERIA FRESH	NJDEP CLASS II-A GWRS	GMW-207	P-13	P-14	P-16	P-17	P-18	P-19	S-13	S-21
Date				03/14/2022	03/14/2022	02/28/2022	02/28/2022	02/28/2022	02/28/2022	02/28/2022	03/14/2022	03/04/2022
Chemical	Units											
2,4-dimethylphenol	µg/L	100	100	NA	<3.1	NS	<3.1	<3.2	<3.1	<3.1	<3.1	<3.0

Notes:

BW SW CRITERIA FRESH Bayway Surface Water Criteria Standards - Fresh
 NJDEP GWRS New Jersey Department of Environmental Protection Class II-A Ground Water Remediation Standards
 Green Well ID Analytical results are compared to the NJDEP GWRS and Fresh SW Criteria
 Gray Well ID Analytical results are compared to the NJDEP GWRS only
 µg/L Micrograms per liter
 <5.0 Not detected at or above the method detection limit, method detection limit included.
 NA Not analyzed
 NS Not sampled

**TABLE 5.3-4
METALS IN GROUND WATER IAOC A10 - GASOLINE COMPONENT TANKFIELD**

**EXXONMOBIL ENVIRONMENTAL AND PROPERTY SOLUTIONS COMPANY / BAYWAY REFINERY COMPLEX
LINDEN, NEW JERSEY**

Location ID		BW SW CRITERIA FRESH	NJDEP CLASS II-A GWRS	GMW-207	P-13	P-14	P-16	P-17	P-18	P-19	S-13		S-21	
Date				03/14/2022	03/14/2022	09/20/2021	02/28/2022	02/28/2022	02/28/2022	02/28/2022	03/14/2022	03/14/2022 (F)	03/04/2022	03/04/2022 (F)
Chemical	Units													
Lead	µg/L	5.4	5	1.1 B	14 B	NS	4.5	0.77	1	23	75 B F1	3.8 B	4.7	0.11 J
Mercury	µg/L	0.77	2	NA	0.22	NS	0.19 J	0.21	0.17 J	0.23	0.11 J	0.15 J	0.096 J	<0.079

Notes:

BW SW CRITERIA FRESH Bayway Surface Water Criteria Standards - Fresh

NJDEP GWRS New Jersey Department of Environmental Protection Class II-A Ground Water Remediation Standards

Green Well ID Analytical results are compared to the NJDEP GWRS and Fresh SW Criteria

Gray Well ID Analytical results are compared to the NJDEP GWRS only

µg/L Micrograms per liter

NA Not analyzed

NS Not sampled

<5.0 Not detected at or above the method detection limit, method detection limit included.

(F) Sample was filtered in the field

B Compound found in blank and sample

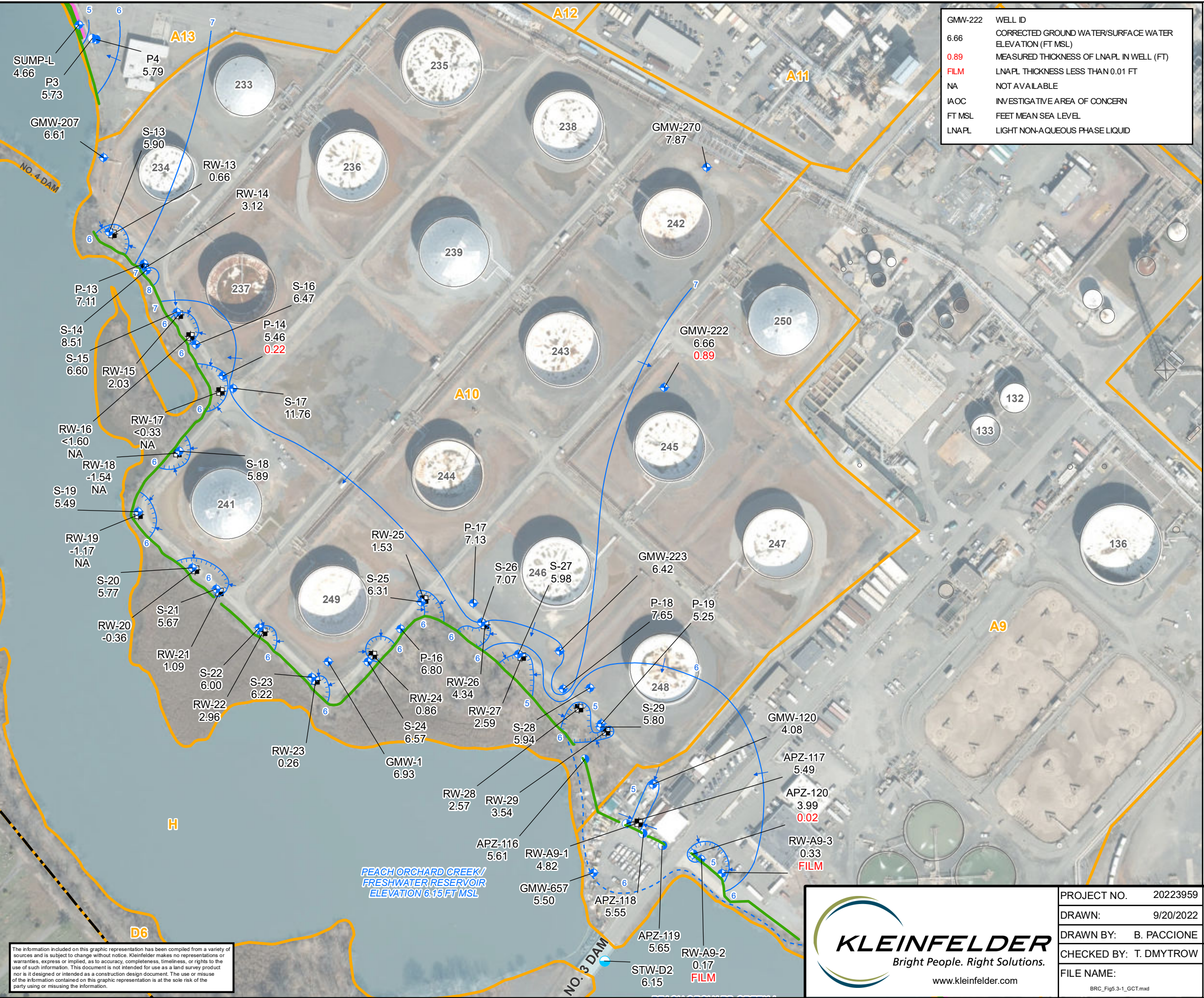
F1 MS and/or MSD recovery exceeds control limits

J Indicates an estimated value

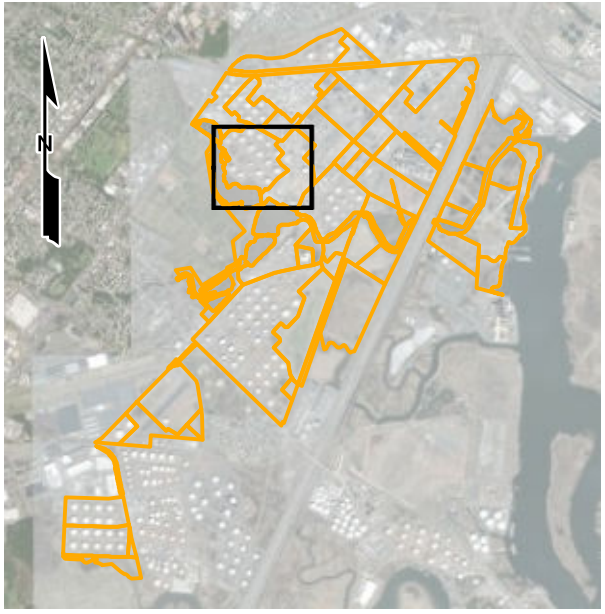
Gray Shading Indicates a concentration above the NJDEP Class II-A GWRS

Figures

\\azraissforp01\GIS Projects\Client\ExxonMobil\NJ_BRC\MXD\ SiteWide\2022_SAPR\2022_1H_Q1Q2\BRC_Fig5.3-1_GCT.mxd



GMW-222	WELL ID
6.66	CORRECTED GROUND WATER/SURFACE WATER ELEVATION (FT MSL)
0.89	MEASURED THICKNESS OF LNAPL IN WELL (FT)
FILM	LNAPL THICKNESS LESS THAN 0.01 FT
NA	NOT AVAILABLE
IAOC	INVESTIGATIVE AREA OF CONCERN
FT MSL	FEET MEAN SEA LEVEL
LNAPL	LIGHT NON-AQUEOUS PHASE LIQUID



LEGEND

- INFERRED GROUND WATER FLOW DIRECTION
- GROUND WATER ELEVATION CONTOUR (1 FOOT)
- DEPRESSION CONTOUR
- INFERRED GROUND WATER CONTOUR
- MONITORING WELL LOCATION
- RECOVERY WELL LOCATION
- PIEZOMETER LOCATION
- STILLING WELL LOCATION
- RECOVERY TRENCH
- SUBSURFACE BARRIER WALL
- TANK
- IAOC BOUNDARY
- PROPERTY BOUNDARY
- OPEN WATER

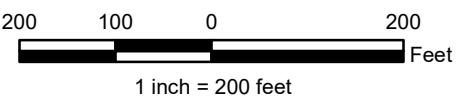
REFERENCES

- MAP AND WATER BODY LIMITS DERIVED FROM FIGURE ENTITLED "WETLAND DELINEATION SURVEY, BAYWAY REFINERY, CITY OF LINDEN, UNION COUNTY, NEW JERSEY", PREPARED BY KELLER & KIRKPATRICK INC., DATED 9-3-15, LAST UPDATED 9-21-16.
- BASE MAP TOPOGRAPHIC FEATURES TAKEN FROM A MAP PREPARED BY ATLANTIS AERIAL SURVEY CO., INC. FROM PHOTOGRAPHY DATED OCTOBER 3, 2003.

HORIZONTAL DATUM: NAVD 1983
VERTICAL DATUM: NGVD 1929
DISTANCE MEASUREMENTS ARE EXPRESSED IN U.S. FEET

NOTES

- SURFACE WATER LIMITS ARE SUBJECT TO SEASONAL AND TIDAL VARIATIONS.
- IAOC DESIGNATION "H" INCLUDES SURFACE WATER BODIES WITHIN THE REFINERY UP TO THE CONFLUENCE OF THE ARTHUR KILL. THE ARTHUR KILL AND PILES CREEK ARE NOT INCLUDED AS AN IAOC.
- IAOC BOUNDARY DESIGNATION LINES ABUTTING THE PROPERTY BOUNDARY SHALL BE CONSIDERED SYNONYMOUS WITH THE PROPERTY BOUNDARY.
- THE GCT, A9 AND DOMESTIC TRADE TERMINAL GROUND WATER EXTRACTION SYSTEMS WERE OPERATING DURING GAUGING.
- WELLS THAT ARE NOT INCLUDED IN THE GAUGING EVENT ARE NOT DEPICTED FOR CLARITY.
- LNAPL THICKNESS IS ONLY SHOWN FOR WELLS WHERE IT WAS DETECTED.
- <= GROUND WATER ELEVATION IS LOWER THAN THE ELEVATION DEPICTED, WHICH WAS CALCULATED USING THE DEPTH TO TOP OF PUMP MEASURED DURING THE EVENT; ACTUAL DEPTH TO LNAPL AND/OR GROUND WATER WAS UNABLE TO BE MEASURED DUE TO THE LIMITED CLEARANCE BETWEEN WELL CASINGS/SCREEN AND THE RECOVERY PUMP.
- ALL CONTOURS NOT SHOWN AROUND S-17 FOR CLARITY.



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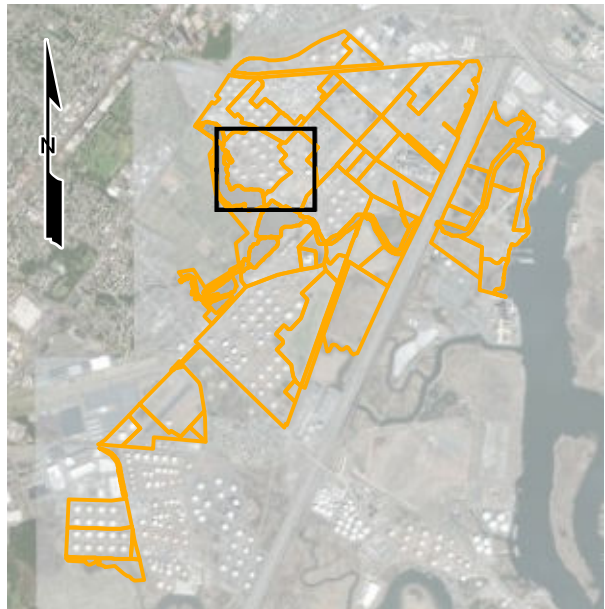
PROJECT NO.	20223959
DRAWN:	9/20/2022
DRAWN BY:	B. PACCIONE
CHECKED BY:	T. DMYTROW
FILE NAME:	BRC_Fig5.3-1_GCT.mxd

GASOLINE COMPONENT TANKFIELD GROUND WATER ELEVATION CONTOUR MAP MARCH 11, 2022	FIGURE
BAYWAY REFINERY COMPLEX LINDEN, NEW JERSEY SEMIANNUAL PROGRESS REPORT JANUARY THROUGH JUNE 2022	5.3-1

\\azqisstor01\GIS Projects\Client\ExxonMobil\NJ BRC\MXD\ SiteWide\2022 SAPR\2022 1H Q1Q2BRC Fig5.3-2 GCT.mxd

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GMW-222	WELL ID
6.75	CORRECTED GROUND WATER/SURFACE WATER ELEVATION (FT MSL)
1.39	MEASURED THICKNESS OF LNAPL IN WELL (FT)
IAOC	INVESTIGATIVE AREA OF CONCERN
FT MSL	FEET MEAN SEA LEVEL
LNAPL	LIGHT NON-AQUEOUS PHASE LIQUID
NA	NOT AVAILABLE



LEGEND

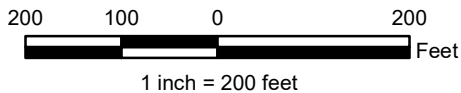
- MONITORING WELL LOCATION
- RECOVERY WELL LOCATION
- PIEZOMETER LOCATION
- STILLING WELL LOCATION
- INFERRED GROUND WATER FLOW DIRECTION
- GROUND WATER ELEVATION CONTOUR (1 FOOT)
- DEPRESSION CONTOUR
- RECOVERY TRENCH
- SUBSURFACE BARRIER WALL
- TANK
- IAOC BOUNDARY
- PROPERTY BOUNDARY
- OPEN WATER

REFERENCES

- MAP AND WATER BODY LIMITS DERIVED FROM FIGURE ENTITLED "WETLAND DELINEATION SURVEY, BAYWAY REFINERY, CITY OF LINDEN, UNION COUNTY, NEW JERSEY", PREPARED BY KELLER & KIRKPATRICK INC., DATED 8-3-15, LAST UPDATED 8-21-16.
- BASE MAP TOPOGRAPHIC FEATURES TAKEN FROM A MAP PREPARED BY ATLANTIS AERIAL SURVEY CO., INC. FROM PHOTOGRAPHY DATED OCTOBER 3, 2003.
HORIZONTAL DATUM: NAVD 1983
VERTICAL DATUM: NGVD 1928
DISTANCE MEASUREMENTS ARE EXPRESSED IN U.S. FEET
- PROPERTY BOUNDARY DERIVED FROM METES AND BOUNDS TAKEN FROM SURVEY, PREPARED BY KELLER & KIRKPATRICK INC., DATED 3-1-93, LAST UPDATED 4-5-93.

NOTES

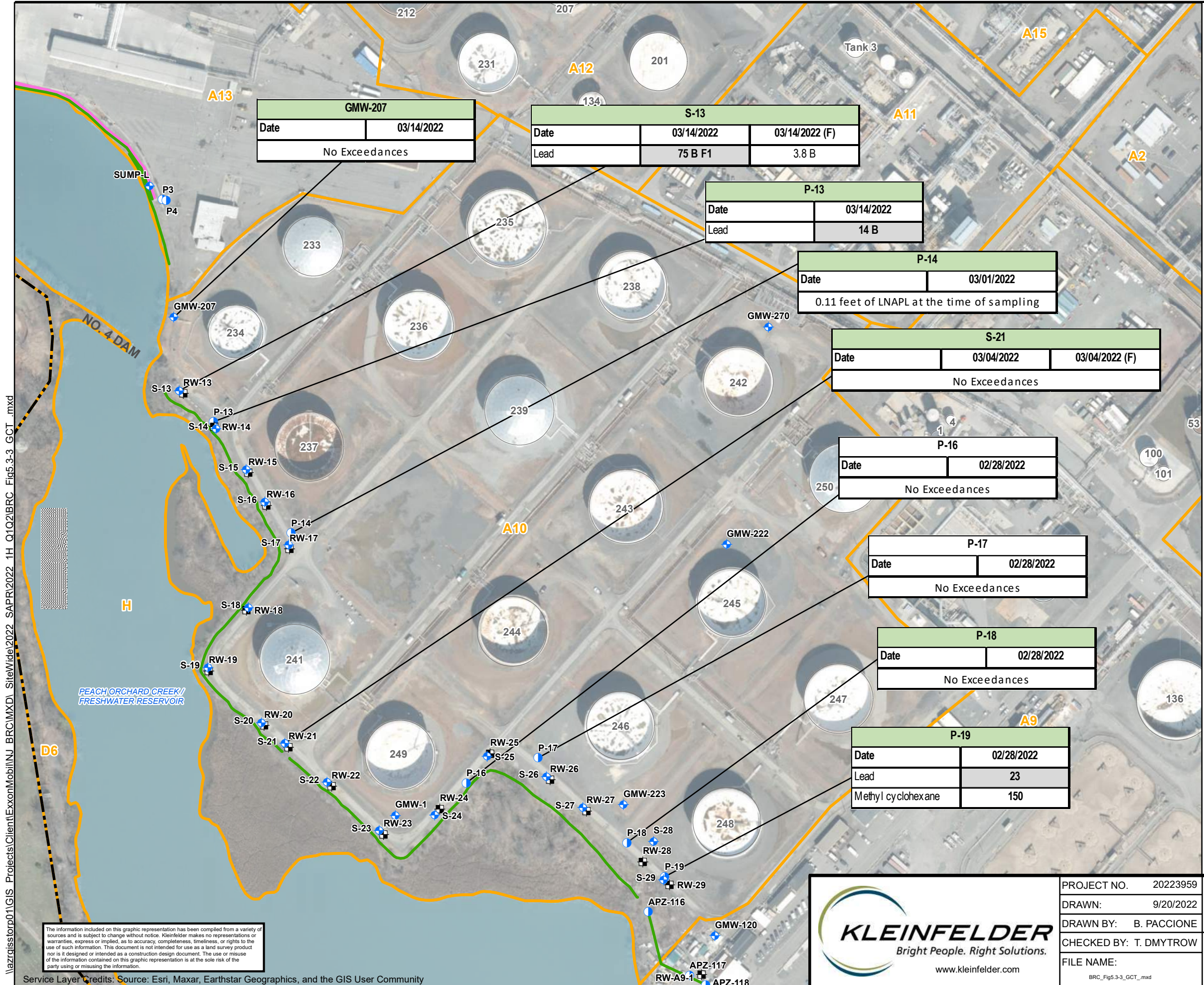
- SURFACE WATER LIMITS ARE SUBJECT TO SEASONAL AND TIDAL VARIATIONS.
- IAOC DESIGNATION "H" INCLUDES SURFACE WATER BODIES WITHIN THE REFINERY UP TO THE CONFLUENCE OF THE ARTHUR KILL. THE ARTHUR KILL AND PILES CREEK ARE NOT INCLUDED AS AN IAOC.
- IAOC BOUNDARY DESIGNATION LINES ABUTTING THE PROPERTY BOUNDARY SHALL BE CONSIDERED SYNONYMOUS WITH THE PROPERTY BOUNDARY.
- THE GCT, A9 AND DOMESTIC TRADE TERMINAL GROUND WATER EXTRACTION SYSTEMS WERE OPERATING DURING GAUGING.
- WELLS THAT ARE NOT INCLUDED IN THE GAUGING EVENT ARE NOT DEPICTED FOR CLARITY.
- LNAPL THICKNESS IS ONLY SHOWN FOR WELLS WHERE IT WAS DETECTED.
- * = UNABLE TO DETERMINE DEPTH TO WATER AND LNAPL THICKNESS DUE TO LNAPL VISCOSITY. CORRECTED GROUND WATER ELEVATION IS APPROXIMATE, WITH THE ACTUAL ELEVATION LOWER THAN OR EQUAL TO THE ELEVATION SHOWN.
- < = GROUND WATER ELEVATION IS LOWER THAN THE ELEVATION DEPICTED, WHICH WAS CALCULATED USING THE DEPTH TO TOP OF PUMP MEASURED DURING THE EVENT; ACTUAL DEPTH TO LNAPL AND/OR GROUND WATER WAS UNABLE TO BE MEASURED DUE TO THE LIMITED CLEARANCE BETWEEN WELL CASING/SCREEN AND THE RECOVERY PUMP.
- ALL CONTOURS NOT SHOWN AROUND S-17 FOR CLARITY.
- ADDITIONAL MONITORING WELLS IN A9 WERE GAUGED ON 4/22/22 AND USED TO DEFINE THE EXTENT OF CONTOURS.



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CHECKED BY:	T. DMYTROW
FILE NAME:	BRC_Fig5.3-2_GCT.mxd

GASOLINE COMPONENT TANKFIELD GROUND WATER ELEVATION CONTOUR MAP APRIL 22, 2022
BAYWAY REFINERY COMPLEX LINDEN, NEW JERSEY SEMIANNUAL PROGRESS REPORT JANUARY THROUGH JUNE 2022

FIGURE
5.3-2



LEGEND

- MONITORING WELL
- RECOVERY WELL
- PIEZOMETER
- SUBSURFACE BARRIER WALL
- RECOVERY TRENCH
- TANK
- PROPERTY BOUNDARY
- IAOC BOUNDARY
- OPEN WATER

Well ID	Applicable SWQS
GMW-207	SWQS (FRESH WATER)
P-13	
P-14	
P-18	
P-19	
S-13	
S-21	
GMW-135	NOT APPLICABLE
P-16	(COMPARED TO NJDEP CLASS II-A GWRS ONLY)
P-17	

Chemical	SWQS (FRESH WATER)	NJDEP CLASS II-A GWRS
Lead	5.4	5
Methyl cyclohexane	52	~

NOTES

- IAOC BOUNDARY DESIGNATION LINES ABUTTING THE PROPERTY BOUNDARY SHALL BE CONSIDERED SYNONYMOUS WITH THE PROPERTY BOUNDARY.
- IAOC DESIGNATION "H" INCLUDES SURFACE WATER BODIES WITHIN THE REFINERY UP TO THE CONFLUENCE OF THE ARTHUR KILL. THE ARTHUR KILL AND PILES CREEK ARE NOT INCLUDED AS AN IAOC.
- ALL CONCENTRATIONS SHOWN IN MICROGRAMS PER LITER (µg/L).
- SWQS = SURFACE WATER QUALITY STANDARDS (SHOWN FOR EVALUATION PURPOSES ONLY - NO SURFACE WATER SAMPLES WERE COLLECTED).
- GWRS = NEW JERSEY DEPARTMENT OF ENVIRONMENTAL PROTECTION CLASS II-A GROUND WATER REMEDIATION STANDARDS.
- THE GWRS FOR METALS APPLY TO TOTAL METALS DATA. THE SWQS FOR METALS (FRESH WATER AND SALINE) APPLY TO DISSOLVED METALS DATA.
- ONLY ANALYTES THAT EXCEEDED THE APPLICABLE SWQS OR THE NJDEP CLASS II-A GWRS WITH THE EXCEPTION OF ALUMINUM, CHLORIDE, IRON, MANGANESE, AND SODIUM ARE INCLUDED ON THIS FIGURE.
- GRAY SHADING = CONCENTRATION EXCEEDS NJDEP CLASS II-A GWRS
- BOLD = CONCENTRATION EXCEEDS APPLICABLE SWQS (FRESH WATER OR SALINE)
- ~ = A NJDEP CLASS II-A GWRS DOES NOT EXIST FOR THIS ANALYTE
- B = ANALYTE WAS FOUND IN THE BLANK AND SAMPLE
- F1 = MATRIX SPIKE (MS) AND/OR MATRIX SPIKE DUPLICATE (MSD) RECOVERY EXCEEDS CONTROL LIMITS
- (F) = DISSOLVED METALS, SAMPLE WAS FILTERED IN THE FIELD.

REFERENCES

- MAP AND WATER BODY LIMITS DERIVED FROM FIGURE ENTITLED "WETLAND DELINEATION SURVEY, BAYWAY REFINERY, CITY OF LINDEN, UNION COUNTY, NEW JERSEY", PREPARED BY KELLER & KIRKPATRICK INC., DATED 9-3-15, LAST UPDATED 9-21-16.
- BASE MAP TOPOGRAPHIC FEATURES TAKEN FROM A MAP PREPARED BY ATLANTIS AERIAL SURVEY CO., INC. FROM PHOTOGRAPHY DATED OCTOBER 3, 2003.
HORIZONTAL DATUM: NAD 1983
VERTICAL DATUM: NAVD 1929
DISTANCE MEASUREMENTS ARE EXPRESSED IN U.S. FEET
- PROPERTY BOUNDARY DERIVED FROM METES AND BOUNDS TAKEN FROM SURVEY, PREPARED BY KELLER & KIRKPATRICK INC., DATED 3-1-93, LAST UPDATED 4-5-93.

200 100 0 200 Feet

1 inch = 200 feet

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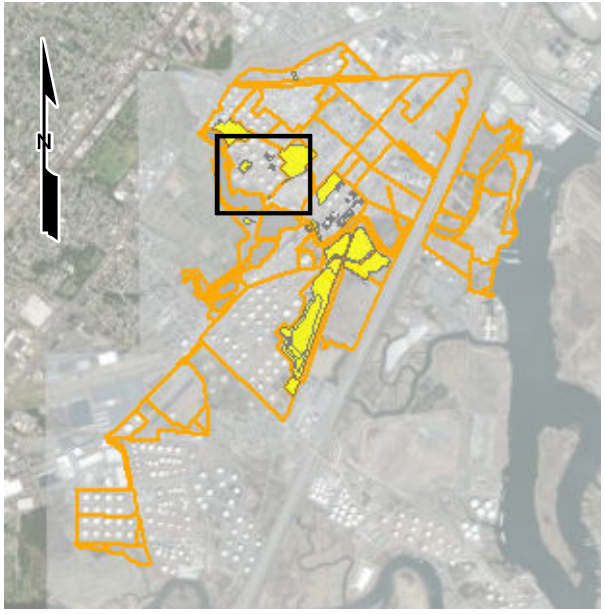
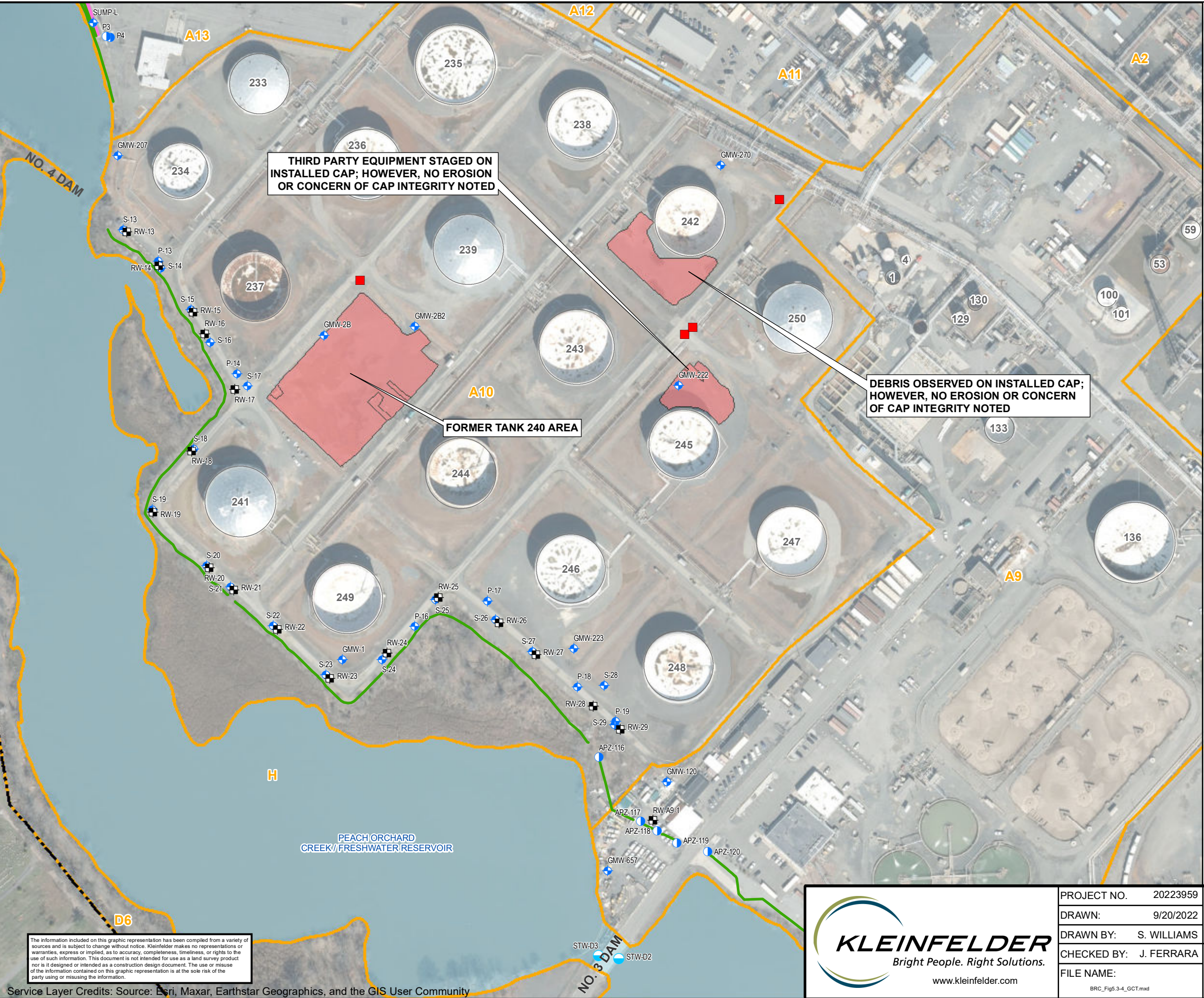
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PROJECT NO.	20223959
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DRAWN BY:	B. PACCIONE
CHECKED BY:	T. DMYTROW
FILE NAME:	BRC_Fig5.3-3_GCT.mxd

GASOLINE COMPONENT TANKFIELD GROUND WATER ANALYTICAL RESULTS MAP	FIGURE 5.3-3
BAYWAY REFINERY COMPLEX LINDEN, NEW JERSEY SEMIANNUAL PROGRESS REPORT JANUARY THROUGH JUNE 2022	

\\azgisstor01\GIS Projects\Client\ExxonMobil\NJ_BRC\MXD\ SiteWide\2022 SAPR\2022 1H Q1Q2\BRC_Fig5.3-4 GCT.mxd



LEGEND

- SITE-SPECIFIC REMEDIAL ACTION SIGN LOCATION
- ◆ MONITORING WELL
- ⊕ RECOVERY WELL
- PIEZOMETER
- STILLING WELL
- SUBSURFACE BARRIER WALL
- RECOVERY TRENCH
- TANK
- AREA OF CONCERN SPECIFIC CONTROL
- CAPPED AREA (INSET VIEW)
- PROPERTY BOUNDARY
- IAOC BOUNDARY
- OPEN WATER

REFERENCES


1. MAP AND WATER BODY LIMITS DERIVED FROM FIGURE ENTITLED "WETLAND DELINEATION SURVEY", BAYWAY REFINERY, CITY OF LINDEN, UNION COUNTY, NEW JERSEY, PREPARED BY KELLER & KIRKPATRICK INC., DATED 8-3-15, LAST UPDATED 9-21-16.
2. BASE MAP TOPOGRAPHIC FEATURES TAKEN FROM A MAP PREPARED BY ATLANTIS AERIAL SURVEY CO., INC. FROM PHOTOGRAPHY DATED OCTOBER 3, 2003.
3. PROPERTY BOUNDARY DERIVED FROM METES AND BOUNDS TAKEN FROM SURVEY, PREPARED BY KELLER & KIRKPATRICK INC., DATED 3-1-93, LAST UPDATED 4-5-93.

HORIZONTAL DATUM: NAVD 1983
VERTICAL DATUM: NGVD 1929
DISTANCE MEASUREMENTS ARE EXPRESSED IN U.S. FEET

NOTES

1. IAOC DESIGNATION "H" INCLUDES SURFACE WATER BODIES WITHIN THE REFINERY UP TO THE CONFLUENCE OF THE ARTHUR KILL. THE ARTHUR KILL AND PILES CREEK ARE NOT INCLUDED AS AN IAOC.
2. IAOC BOUNDARY DESIGNATION LINES ABUTTING THE PROPERTY BOUNDARY SHALL BE CONSIDERED SYNONYMOUS WITH THE PROPERTY BOUNDARY.

200 100 0 200 Feet
1 inch = 200 feet

 <p>KLEINFELDER <i>Bright People. Right Solutions.</i> www.kleinfelder.com</p>	PROJECT NO.	20223959	GASOLINE COMPONENT TANKFIELD SOIL REMEDIAL ACTION LOCATION	FIGURE 5.3-4
	DRAWN:	9/20/2022		
	DRAWN BY:	S. WILLIAMS		
	CHECKED BY:	J. FERRARA		
	FILE NAME:	BRC_Fig5.3-4_GCT.mxd	BAYWAY REFINERY COMPLEX LINDEN, NEW JERSEY SEMIANNUAL PROGRESS REPORT JANUARY THROUGH JUNE 2022	